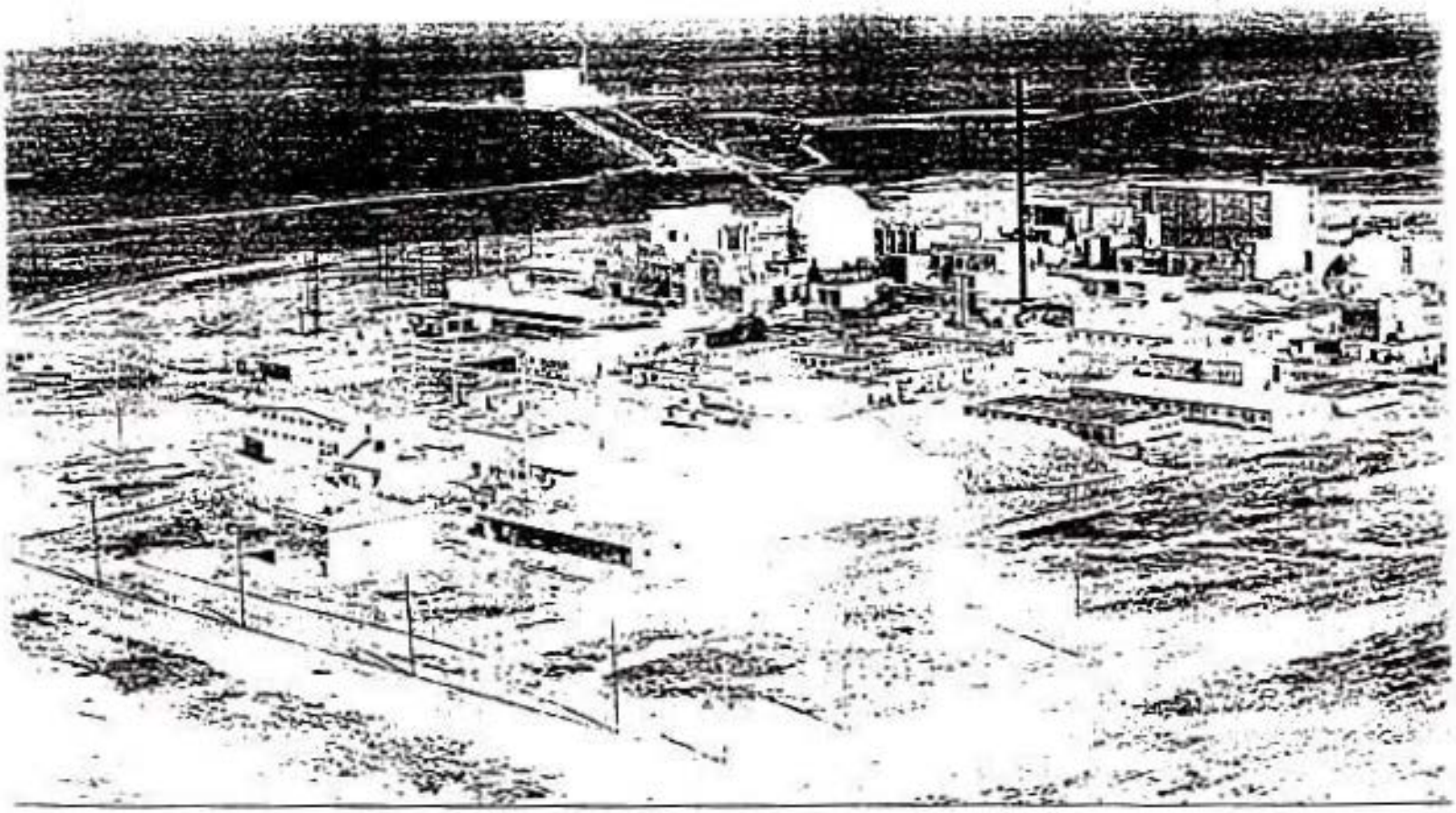
IDAHO DEPARTMENT OF HEALTH AND WELFARE

DIVISION OF ENVIRONMENTAL QUALITY

Explanation of Significant Difference

Argonne National Laboratory - West



Operable Unit 9-04
Idaho National Engineering and Environmental Laboratory
Idaho Falls, Idaho
February 14, 2000

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

February 14, 2000

MEMORANDUM

To: Michael F. Gearheard, Director, Environmental Cleanup Office
Through: Ann Williamson, Manager, Unit 4 AET
From: Keith Rose, Remedial Project Manager KR
Subject: Explanation of Significant Differences (ESD) for Argonne National Laboratory-West at INEEL

Your concurrence is requested on an ESD for the Record of Decision (ROD) for the Argonne National Laboratory-West, Operable Unit 9-04, which was signed in September, 1998. This ROD selected phytoremediation as the remedy for soils contaminated with Cs-137 and metals. A contingent remedy, excavation and on -site disposal, was also identified for any soil which could not be addressed by phytoremediation in a reasonable timeframe. The reasons for this ESD are:

1) Bench-scale results indicate that phytoremediation would not be successful in achieving cleanup goals in a reasonable timeframe for soils contaminated with mercury and chromium in Ditch B and the east portion of the Main Cooling Tower Blowdown Ditch. Therefore, the contingent remedy, excavation and on-site disposal, will be implemented on approximately 100 cubic yards of soil in these areas.

2) The disposal location for this excavated soil will be the INEEL Central Facilities Area Industrial Waste Landfill, which is a different disposal location than that which was identified in the ROD.

3) Approximately 100 cubic yards of additional soils from the Main Cooling Tower Blowdown Ditch, located between two security fences, was moved approximately 200 feet east of the inner fence prior to implementation of phytoremediation for security reasons. The ex-situ phytoremediation of this soil deviates from the original planned in-situ phytoremediation.

Concur:

Michael F. Gearheard, Director
Environmental Cleanup Office

Non Concur:

Michael F. Gearheard, Director
Environmental Cleanup Office

ACRONYMS

ANL-E	Argonne National Laboratory - East
ANL-W	Argonne National Laboratory - West
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
ESD	Explanation of Significant Differences
DOE	Department of Energy
DOE-CH	Department of Energy Chicago Operations Office
EPA	Environmental Protection Agency
FFA/CO	Federal Facility Agreement and Consent Order
IDHW	Idaho Department of Health and Welfare
INEEL	Idaho National Engineering and Environmental Laboratory
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
ROD	Record of Decision
Rgs	Remediation Goals
RWMC	Radioactive Waste Management Complex
SARA	Superfund Amendments and Reauthorization Act

Explanation of Significant Differences from the Record of Decision for OU 9-04 at the Argonne National Laboratory-West

1. INTRODUCTION

This document presents an Explanation of Significant Differences (ESD) from the Record of Decision (ROD) for the Argonne National Laboratory-West, Operable Unit 9-04, signed by the United States Department of Energy (DOE), the United States Environmental Protection Agency (EPA), and the Idaho Department of Health and Welfare (IDHW) in September of 1998. The ROD was signed pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and the December 1991 Federal Facility Agreement and Consent Order (FFA/CO) entered into by DOE, EPA, and IDHW.

Site Name and Location:

Argonne National Laboratory - West, Waste Area Group 9
Operable Unit 9-04
Idaho National Engineering and Environmental Laboratory
Idaho Falls, Idaho

The lead agency for remedial action at OU 9-04 is the United States Department of Energy Chicago Operations Office (DOE-CH). The EPA and the IDHW both concur with, and agree with the need for, this significant change to the selected remedy. The three agencies participated jointly in the review of new information and in the decision making that led to the preparation of this ESD.

The ESD has been prepared in accordance with Section 117(c) of CERCLA and 40 CFR 300.435 (c) (2)(I) to explain the needed modifications to the selected remedy identified in the ROD.

This ESD and other relevant documents will become part of the Administrative Record file pursuant to Section 300.825 (a)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Copies of this ESD and the Administrative Record are available to the public in the following regional INEEL information Repositories:

2. SITE HISTORY, CONTAMINATION PROBLEMS, AND SELECTED REMEDY

The Idaho National Engineering and Environmental Laboratory (INEEL) is a 2,305 km^2 (890 mi^2) federal facility operated by the DOE and is located on the northern edge of the Eastern Snake River Plain. The Argonne National Laboratory - West (ANL-W) complex is located approximately 48 km (30 mi) west of Idaho Falls in the eastern portion of the INEEL and extends over an area of approximately 3.3 km^2 (810 acres). Figure 1 shows the location of the INEEL and the ANL-W site. The OU 9-04 ROD, which was signed in September 1998, identified soil as the only media of concern. The OU 9-04 ROD identified Alternative 5, Phytoremediation as the selected remedy to remediate all of the sites pending succesfull bench-scale testing. The OU 9-04 ROD also identified a contingent remedy known as Alternative 4, Excavation and on-INEEL Disposal of contaminated soils at either the proposed Soils Repository or the Radioactive Waste Management Complex (RWMC). This contingent remedy was to be implemented if the selected remedy could not be performed.

The principal source of contamination at ANL-W is located in the ditches that transport both surface water runoff and industrial wastewater discharges. The industrial wastewater discharges contained minor concentrations of contaminants that have filtered into fine soils in ditch and pond bottoms over the last 40 years of opperation. The maximum depths of the contaminants at each site vary slightly but generally are contained within in the top two feet of soils. The contaminants include five inorganics (chromium, mercury, selenium, silver, and zinc) and one low-level radionuclide (cesium-137). All of the ANL-W inactive waste sites requiring remedial action are shown in Figure 2.

The change in the remedy described in this ESD currently concerns the remedy for portions of two sites referred to as the east portion of the Main Cooling Tower Blowdown Ditch (ANL-01A) and Ditch B (ANL-01) [see Figure 3] which pose unacceptable ecological risks. The east portion of the Main Cooling Tower Blowdown Ditch contains trivalent chromium and inorganic mercury which pose unacceptable risks to numerous plant species and the Merriams shrew, respectively. The west portion of the Main Cooling Tower Blowdown Ditch contains much lower levels of inorganics and will continue to be remediated using phytoremediation. The soils in Ditch B contain trivalent chromium and zinc that pose unacceptable risks to the numerous plants and red-winged blackbirds, respectively.

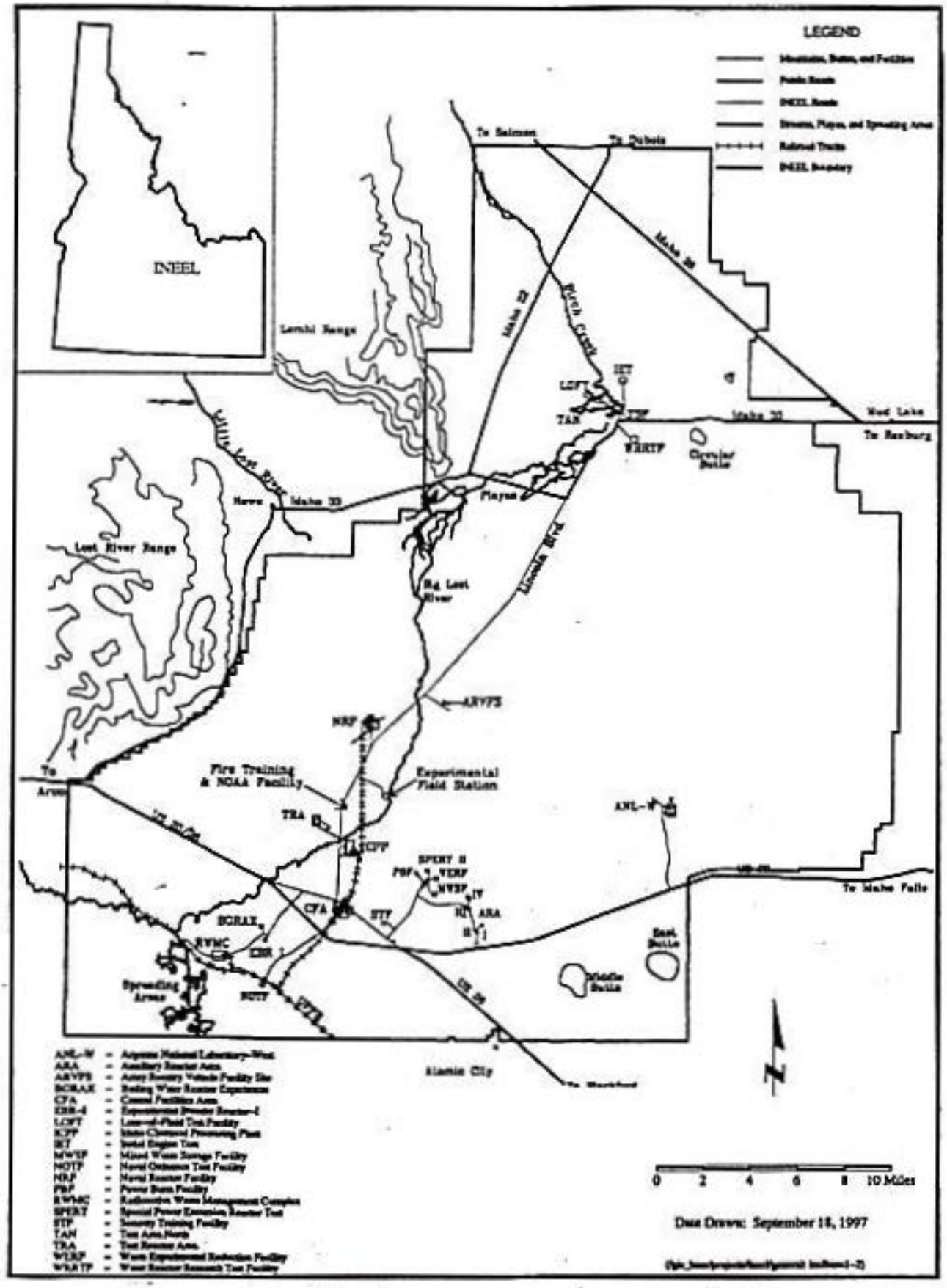


Figure 1. Location of ANL-W at the Idaho National Engineering and Environmental Laboratory.

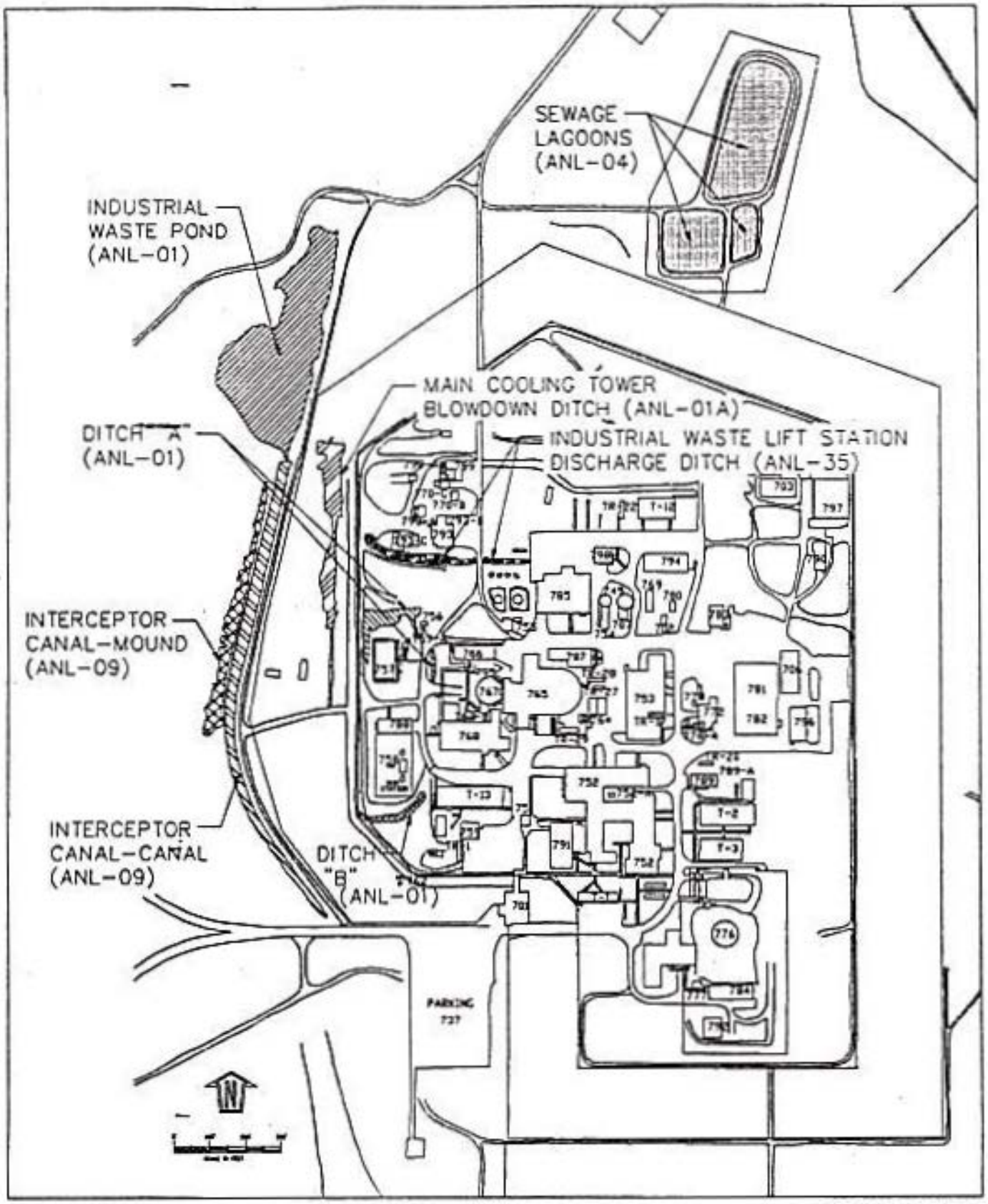


Figure 2 Eight Areas at ANL-W with Unacceptable Human Health or Ecological Risks.

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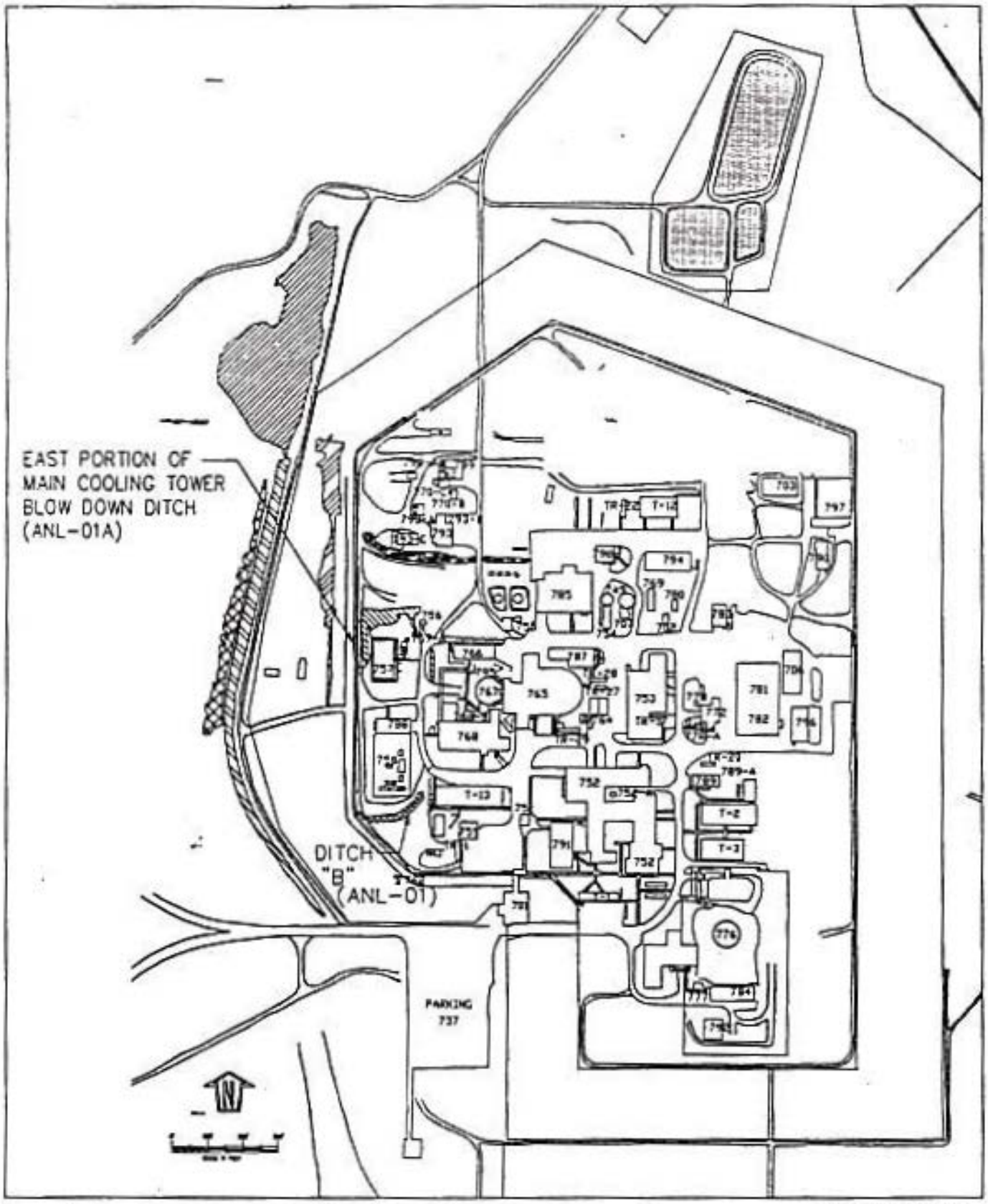

Figure 3 Location of two ditch portions affected by this ESD.

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3. DESCRIPTION OF SIGNIF...NT DIFF...CES

The reasons for this Explanation of Significant Difference (ESD) are:

1. Phytoremediation, the selected remedy in the September, 1998 Record of Decision (ROD) cannot be implemented in Ditch B and the east portion of the Main Cooling Tower Blowdown Ditch. The contingent remedy, excavation and disposal, will be implemented for these areas.

2. The disposal location for the approximately 100 cubic meters of nonradioactive soils undergoing remediation with the contingent remedy will be at another on-INEEL location not identified in the OU 9-04 ROD.

3. Approximately 100 cubic yards of Main Cooling Tower Blowdown Ditch soils located in-between the two security fences was moved approximately 200 feet east of the inner-most fence prior to implementation of phytoremediation. This ex-situ phytoremediation deviated from the original planned in-situ remediation.

The ROD was signed in September 1998, prior to completion of the bench-scale testing of phytoremediation on the ANL-W soils. As such, the ROD stipulated that the use of the phytoremediation would only be implemented if the contaminant uptake rates were high enough to allow DOE to meet the Remediation Goals (RGs) within a reasonable timeframe. The results of the bench-scale testing were presented to the EPA and IDHW in January 1999 and it was the consensus of the three agencies that the selected remedy of Phytoremediation would not be successful in meeting the remedial action objectives in Ditch B and the east portion of the Main Cooling Tower Blowdown Ditch within a reasonable timeframe. Therefore, an ESD is needed to identify that the contingent remedy, excavation and disposal, will be implemented at these two sites (Ditch B and the east portion of the Main Cooling Tower Blowdown Ditch). This decision was based on bench-scale contaminant removal rate data which indicated that continued use of phytoremediation would be required for several decades to meet the remediation goals at the two ditch portions. This excessively long time for cleanup is due to both the low rate of mercury and chromium contaminant removal by plants, and also to the relatively high concentration of these contaminants in these two ditch portions.

The second item that differs from the Record of Decision is a change in the disposal location for the soil that must be excavated using the contingent remedy. In its discussion of Alternative 4, the ROD identified and evaluated two facilities that could receive the wastes from the contingent remedy. These sites are the proposed INEEL soils repository and the INEEL Radioactive Waste Management Complex (RWMC). These sites are no longer the preferred disposal location since the INEEL soils repository has yet not been built and these particular soils do not contain sufficiant radioactive materials for acceptance at the INEEL RWMC. The soils from the two ditch portions that cannot be cleaned up through phytoremediation will be excavated and disposed of at a landfill other than the two locations identified in the Record of Decision. The excavated soil will be disposed of at the Central Facilities Area Industrial Waste Landfill on the INEEL, located 15 miles from Argonne-West. The excavated soil will be transported to the INEEL Central Facilities Area Industrial Waste Landfill and will be buried at such a depth as to eliminate all exposure pathways to ecological receptors. The Central Facilities Area Industrial Waste Landfill, although not an off-site disposal facility, complies with the substantive requirements of the Off-Site Disposal Rule--{40 CFR 300, 58 FR 49200}. This rule requires that the landfill be in compliance with federal, state and local regulations governing non-RCRA landfills, and that the landfill have no current or historic releases of hazardous substances to the environment.

3.2 Change in Disposal Location

Both of the ditch portions that will undergo excavation and disposal contain soils with non-radioactive inorganic contaminants that pose unacceptable risks to the local ecological receptors. These soils in the east portion of the Main Cooling Tower Blowdown Ditch and Ditch B do not contain any DOE-added radionuclides, and do not pose an unacceptable risk to human health. The soils also do not contain contaminants in sufficient concentrations to be regulated under RCRA or the Idaho Hazardous Waste Management Act. Thus, these soils can be disposed of at an approved Industrial Landfill that will eventually be closed and capped. The approved Industrial Landfill that DOE has chosen to use is the INEEL Central Facilities Area Industrial Waste Landfill. This is an active Non-Municipal Solid Waste Landfill that is operated in accordance with 40 CFR 257 Subpart A, which will eliminate the direct ecological exposure pathway by providing at least four feet of cover material over the contaminated media. The four feet of cover material is greater than the maximum burrowing depth of the mammals. The final capping and closure of the INEEL Central Facilities Area Industrial Waste Landfill would permanently eliminate ecological risks from the ditch soils since they would remain at a depth much greater than four feet and have protective measures to ensure that the secondary plant to animal pathway is broken. The volume of soil from these two sites is approximately 140 cubic yards of soil based on extent of contamination identified in the OU 9-04 RI/FS. The additional cost increase of implementing the contingent remedy of Excavation and Disposal over Phytoremediation is approximately $45,000 which is also based on estimates in the OU 9-04 RI/FS. However, the ROD cost estimates were based on the objective of achieving cleanup goals within seven years through phytoremediation. If phytoremediation requires a longer period of time to achieve cleanup goals, the cost of phytoremediation would increase in proportion to the additional time required.

3.3 Change to Ex-situ Remediation

Because of security upgrades, ANL-W Security Management would not allow the planting of 1,200 trees in that portion of the Main Cooling Tower Blowdown Ditch that is located between two security fences. This resulted in a change to ex-situ phytoremediation from the planned in-situ phytoremediation. Approximately 100 cubic yards of soil in the Main Cooling Tower Blowdown Ditch was excavated and moved 200 feet east inside the secure area. The soil was placed on top of existing soil and graded prior to installation of the irrigation lines and planting of the trees. The EPA, IDHW and DOE agreed that the change from in-situ to ex-situ phytoremediation should be implemented quickly to prevent the loss of the bare root willow trees that were already purchased and shipped to ANL-W. The trees were planted approximately 45 days behind the original planting schedule and DOE does not anticipate any detrimatal effects because of the planting delay. During review of the nine evaluation criteria in the WAG 9 ROD, the only change is a slight increase in costs of performing the ex-situ verses in-situ phytoremediation. The work was completed by in-house personnel and equipment and completed for $20, 000. The increased cost did not affect the ranking of the remediation alternatives that were described in the ROD for ANL-W.

4. AFFIRMATION OF THE STATUTORY DETERMINATION

Considering the new information that has been developed and the changes that have been made to the selected remedy, EPA, DOE and IDHW believe that the remedy remains protective of human health and the environment, complies with federal and state requirements that were identified in the ROD as applicable or relevant and appropriate to this remedial action at the time the original ROD was signed, and is cost-effective. In addition, the revised remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this site.

5. PUBLIC PARTICIPATION ACTIVITIES

This ESD has been published and a notice placed in the Post Register (Idaho Falls), Idaho State Journal (Pocatello), Sho-Ban News (Fort Hall), Times News (Twin Falls), Idaho Statesman (Boise), and Daily News (Moscow). This ESD and the contents of the Administrative Record are available for public review (refer to binder for Operable Unit 9-04). As modified from the original ROD, this action does not represent a fundamental change in scope or purpose; therefore, a formal comment period will not be conducted.

Consistent with NCP Section 300.435(c)(2)(I), this ESD has been placed into the previously listed INEEL Information Repositories, after publication in the following papers:

Post Register (Idaho Falls, Idaho State Journal (Pocatello), Sho-Ban News (Fort Hall), Idaho Statesman (Boise, and Daily News (Moscow).

The public is encouraged to review this ESD and other relevant documentation in the Administrative Record and provide comments to any of the Agencies involved. Additional information may be requested within 14 days of the notice of issuance for this ESD by contacting:

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